

A warming eastern Indian Ocean points to a developing negative IOD

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All atmospheric and oceanic indicators of ENSO have remained neutral (neither El Niño nor La Niña) since mid-2012. While most models suggest that neutral conditions will continue in 2013, it remains possible that a La Niña event could develop later in the year.

In the tropical Indian Ocean, warmer-than-average ocean temperatures have persisted in the east, while in recent weeks, ocean temperatures in the western Indian Ocean have cooled slightly. As a result of this pattern, the IOD index has been below -0.4 since mid-May. If this index remains at or below -0.4 until late July, 2013 will be classified as a negative IOD year. Four of the five models surveyed point to a negative IOD during the southern winter-spring period.

A negative IOD during winter-spring increases the chances of above-average rainfall over southern Australia and increased humidity over parts of northern Australia. The northwest cloudband that tracked across Australia during the first weekend of June is one example of how a negative IOD might influence southern Australia. [See video of satellite images from the event.](#)

Next update expected on 18 June 2013 | [print version](#)

Further Details

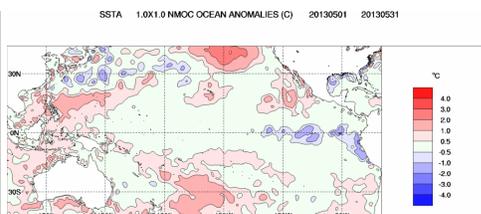
Sea Surface Temperatures

Monthly sea surface temperatures:

The sea-surface temperature (SST) anomaly map for May shows cool SST anomalies across the eastern tropical Pacific and along part of the coast of Peru in South America, a cooling compared to April. SST anomalies are near-average across the majority of the remaining tropical Pacific and warm anomalies continue across the Maritime Continent region.

Index	April	May	Temperature change
NINO3	+0.1	-0.4	0.5 °C cooler
NINO3.4	+0.1	-0.1	0.2 °C cooler
NINO4	0.0	+0.1	0.1 °C warmer

Baseline period 1961–1990.

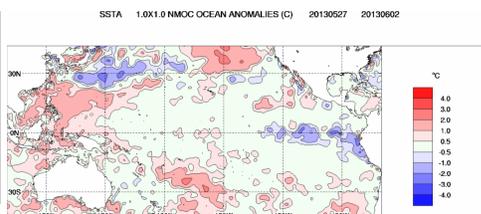


Weekly sea surface temperatures:

When compared with two weeks ago, SST anomalies have warmed in the western equatorial Pacific, cooled in the eastern equatorial Pacific, and remained generally similar in the central region. The map for the week ending 2 June shows negative SST anomalies are present along the equator between the South American coast and 130°W. Elsewhere along the equator SSTs are near average, with warm anomalies in the western Pacific and near the South Pacific Convergence Zone. Warm anomalies also remain around much of the Australian coastline.

Index	Previous	Current	Temperature change (2 weeks)
NINO3	-0.3	-0.5	0.2 °C cooler
NINO3.4	-0.1	0.0	0.1 °C warmer

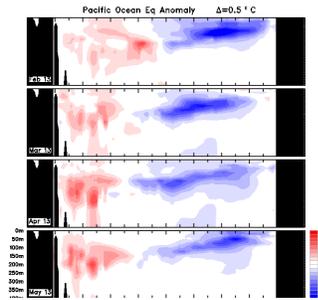
Baseline period 1961–1990.



Pacific ocean sub-surface temperatures

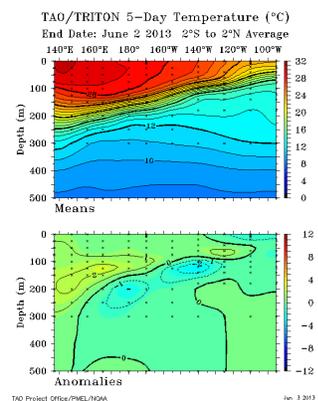
Monthly sub-surface:

The four-month sequence of sub-surface temperature anomalies (ending May) shows cool anomalies in the sub-surface of the eastern to central equatorial Pacific; this pool of cooler than normal water peaked in extent in January and has weakened since. A small area of this pool of cooler-than-average water is more than 3 °C cooler than average for May. Warm anomalies remain present in the sub-surface of the far western equatorial Pacific.



Weekly sub-surface:

Anomalies in the subsurface of the equatorial Pacific have warmed compared to two weeks ago. The sub-surface map for the 5 days ending 2 June shows anomalies more than 2 °C cooler than average in a small area of the eastern equatorial Pacific sub-surface and another area more than 1 °C cooler than average near the Date Line at around 200 m deep. Warm anomalies are still present in the western sub-surface of the equatorial Pacific.



[Animation of recent sub-surface changes](#) | [Archive of sub-surface temperature charts](#)

Southern Oscillation Index:

The Southern Oscillation Index (SOI) has risen steeply over the last two weeks. The latest 30-day SOI value to 2 June is +10.2.

Sustained positive values of the SOI above +8 may indicate a La Niña event, while sustained negative values below -8 may indicate an El Niño event. Values of between about +8 and -8 generally indicate neutral conditions.

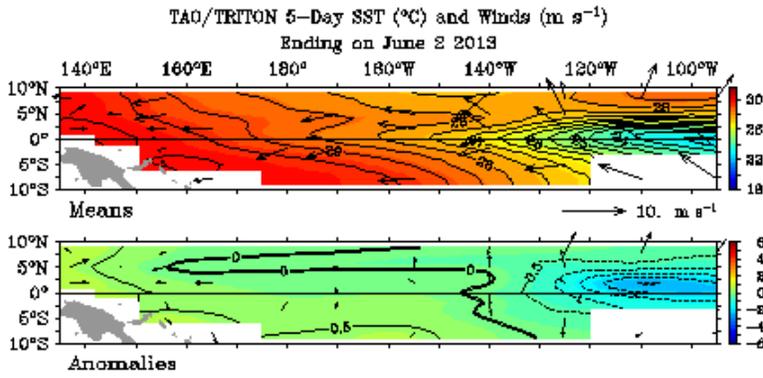


[Monthly graph](#) | [SOI table](#) | [SOI text](#)

Trade winds:

Trade winds have weakened slightly in the far western tropical Pacific during the past two weeks and are now near average across the entire tropical Pacific (see anomaly map for the 5 days ending 2 June).

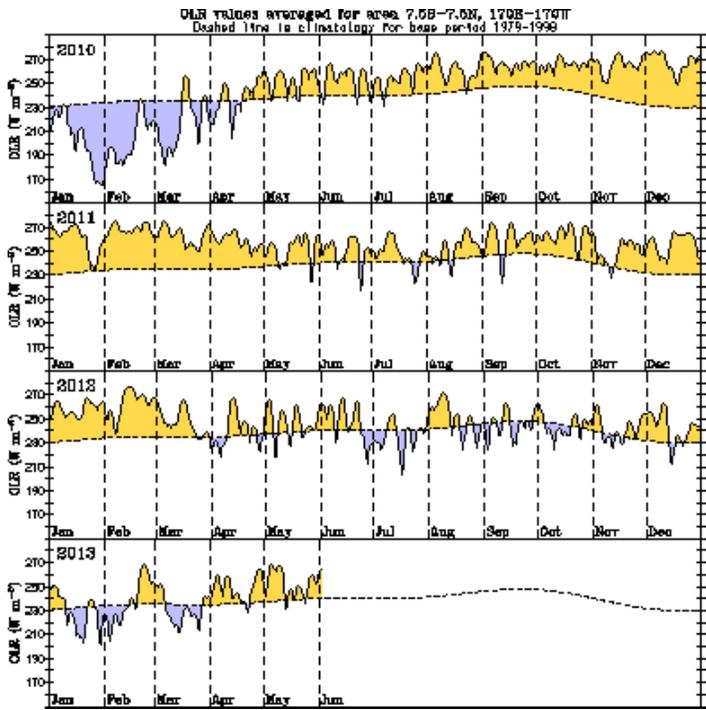
During La Niña events, there is a sustained strengthening of the trade winds across much of the tropical Pacific, while during El Niño events there is a sustained weakening of the trade winds.



Cloudiness near the Date Line:

Cloudiness near the Date Line has been near or slightly below average during the past two weeks.

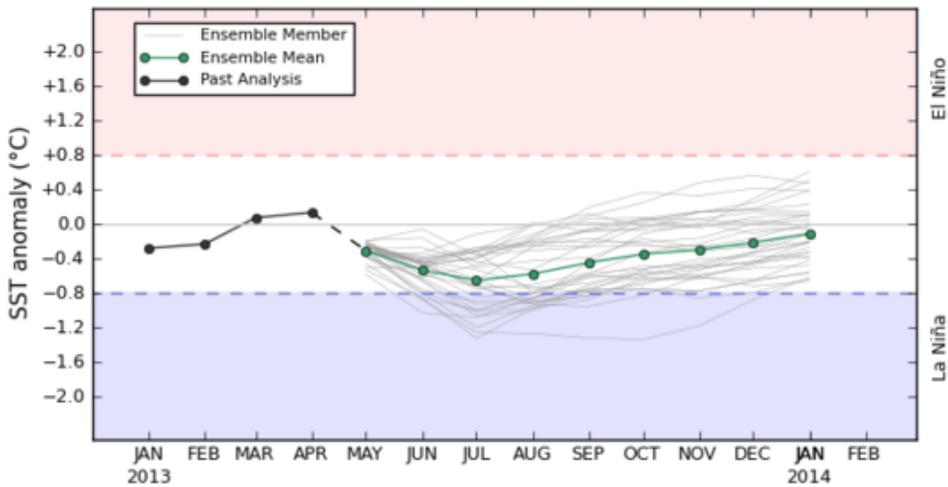
Cloudiness along the equator, near the Date Line, is an important indicator of ENSO conditions, as it typically increases (negative OLR anomalies) near and to the east of the Date Line during an El Niño event and decreases (positive OLR anomalies) during a La Niña event.



Climate Models:

Most international [climate models](#) surveyed by the Bureau indicate that SSTs in the equatorial Pacific Ocean are likely to remain neutral at least until the southern hemisphere spring. Some climate models show a small chance of La Niña developing later in the year.

POAMA monthly mean NINO34 - Forecast Start: 2 MAY 2013



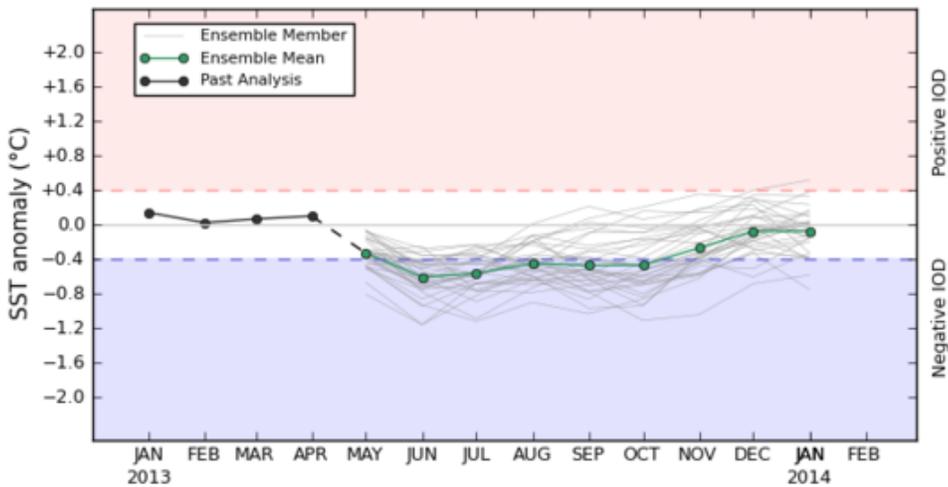
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Indian Ocean Dipole:

The Indian Ocean Dipole (IOD) shows a negative pattern following cooling of the western Indian Ocean in recent weeks; the eastern tropical Indian Ocean and waters surrounding Western Australia have remained consistently warm. The IOD index value has been below the threshold value (-0.4) since mid-May, with the latest value -0.5 °C for the week ending 2 June.

Current [model outlooks](#) suggest this pattern of ocean temperatures, and hence the low values of the IOD Index, will persist through the southern hemisphere winter and into spring. Four of the five models surveyed indicate a negative IOD event, while the fifth indicates weaker negative values of the index. A negative IOD during winter-spring increases the chances of above-average rainfall over southern Australia, and increased humidity over parts of northern Australia.

POAMA monthly mean IOD - Forecast Start: 2 MAY 2013



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[IOD time series](#) [IOD map](#) [IOD forecasts](#) [DMI values](#)

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